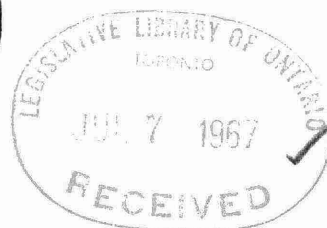
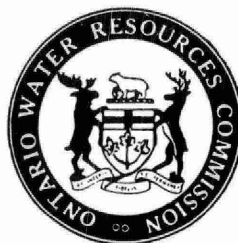


CA2 ON
EV. 506

R2003



Research paper 2003

PROPOSED PROCEDURE

FOR

DETERMINING FLOW

IN

BUILDING WEEPING TILE

DIVISION OF RESEARCH

ONTARIO WATER RESOURCES COMMISSION

January, 1966

R.P. 2003

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By:

M. B. Fielding

January, 1966

Division of Research
Paper No. 2003

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The Ontario Water Resources Commission

DETERMINING FLOW IN BUILDING WEEPING TILE

Purpose

To determine quantity of water contributed to sewers by weeping tile.

Result Required

Imp. gals/hr/ft of tile

Variables

type of tile

type of soil (and backfill)

rainfall (precipitation)

downspout connection

General

To obtain the required result, i.e. gals/hr/ft of tile, it is necessary to isolate the flow contributed by weeping tile from the sanitary sewage flow contributed by the occupants of the dwelling. As the point of measurement moves away from the weeping tile connection, more extraneous flows must be accounted for. (e.g. infiltration, surface flow through catch basins and manhole covers).

Suggested Methods

1. Weeping tile connected to basement sump. This is the most desirable case. By calibration of the sump pump discharge and then timing (by an on-off recorder) the pump running time, the quantity of weeping tile flow is readily available.
2. Weeping tile flow by gravity to sanitary or combined sewer. In this case it is not possible to separate sanitary and drainage flow. It is therefore necessary to sample at times when sanitary flow is at a minimum (12:00 midnight to 6 a.m.) at a manhole close to a dead end to minimize sewer length (and thus infiltration flows) and to keep the number of buildings served to a minimum. The installation of a meter similar to the Penn meter, style X701, MH Flow Recording System at the influent pipe in a manhole would provide the required information. The use of a weir or other measuring device requiring a flow back up is not recommended.

In cases where water consumption in the building is metered and no external water use is involved (i.e. in the

winter when there is no lawn watering, car washing, etc.) flow measurement may be carried on continuously and weeping tile flow determined from "effluent" minus "water supplied" figures.

It is visualized that each municipality will have unique conditions, at least in part, and will therefore be required to make arrangements for flow measurement to suit local conditions. The above suggestions are intended as examples only.

Form of Reporting Results

In the interests of providing test results which will be of value to all municipalities concerned, it is desirable to have a uniform method of reporting. The attached forms are provided for this purpose.

WEEPING TILE FLOW

Date

Municipality

Test by

Description of Test:-

Location

Method

Equipment, etc.

Test periodhrs froma.m. toa.m.
.....p.m. top.m.

Total flowgals

Sanitary flowgals

Infiltration, etc.gals

.....galsgals

Tile flowgals

.....gals/hr

Tile lengthft

Weeping tile flowgals/hr/ft

Rainfall in. (total for test period and 24 hrs
prior to test)

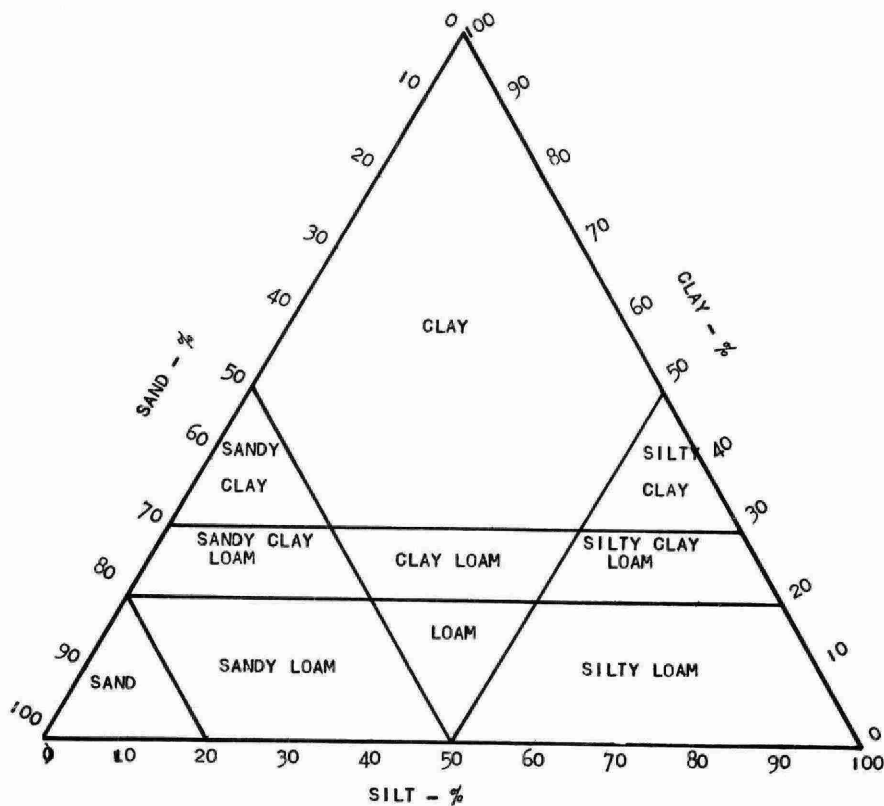
..... in/hr

Soil type (U.S. Bureau of Soils)

(a) general

(b) backfill

Remarks:-



SAND- 0.05 - 2.0 MM
 SILT- 0.005 - 0.05 MM
 CLAY- < 0.005 MM

U.S. BUREAU OF SOILS
 CLASSIFICATION

GRAPH OF
RAINFALL & WEEPING TILE FLOW
VS.
TIME

MUNICIPALITY
DATE

RAINFALL - IN/HR

TILE FLOW - GALS/HR/FT

TIME - HRS.



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